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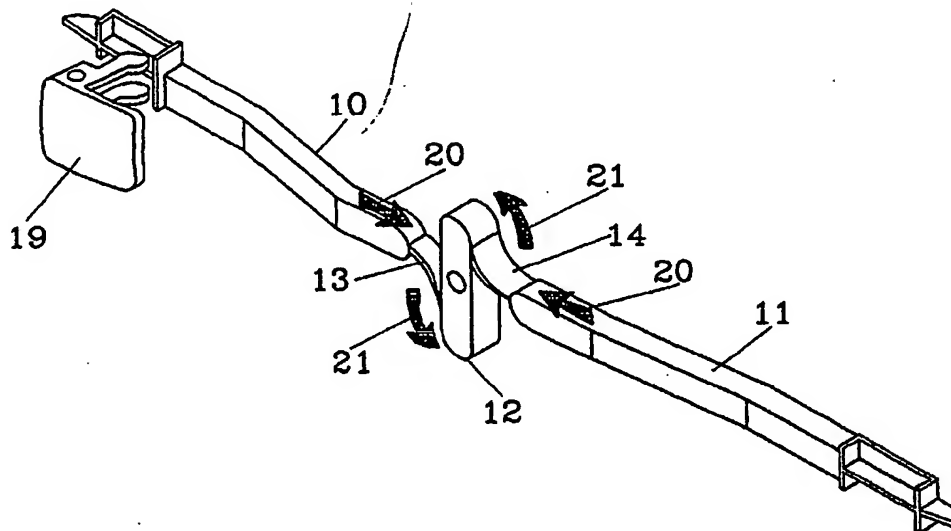
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(54) Title: A MECHANISM FOR LOCKING LIDS



(57) Abstract

A mechanism for locking a lid and a method for producing the mechanism. The lid comprises at least one lock plunger (10, 11) which is longitudinally displaceable between guides in cooperation with a driver (12). The displacement takes place against the action of elastic means (13, 14) which constitute a functional connection between the driver (12) and the respective plunger (10, 11), for guiding both the opening and the locking action of the mechanism. The respective elastic means (13, 14) forms a curve between the driver (12) and the respective plunger (10, 12) when in its locking position. This curve is obtained by pretension of the respective elastic means. The driver (12), the respective elastic means (13, 14) and the respective plunger (10, 11) are produced in one piece by injection moulding of a plastic material. The injection of plastic material to the moulding tool is performed centrically via the driver (12).

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TITLE

A MECHANISM FOR LOCKING LIDS

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TECHNICAL FIELD

The present invention refers to a mechanism for locking a lid, comprising at least one lock plunger which is longitudinally displaceable between guides in cooperation with a driver, which displacement takes place against the action of elastic means which constitute a functional connection between the driver and the respective plunger, for guiding both the opening and the locking action of the mechanism. Also, the invention is related to a method for producing the mechanism.

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BACKGROUND OF THE INVENTION

The passenger compartment of a car usually comprises an instrument panel with a glove compartment which can be locked by means of a lockable lid. The lid is usually for this purpose provided with a mechanism according to the above, for keeping the lid in its locked position. The mechanism shall be able to withstand the forces that occur in a collision, and be able to maintain the locking plungers in their locking position in such a way, that the appearance of vibration related noise is minimized.

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Usually, the mechanism comprises at least one locking plunger which is pressed to its locking position by locking means. A driver is used for manipulating the plunger/plungers so that they can be moved out of their locking position. The details in the mechanism often comprise two plungers, two steel springs, a driver and means for limiting the stroke of the plungers. All these parts are subjected to vibrations, which can generate noise at different frequencies.

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The use of several parts in the mechanism results in substantial costs for storage. The assembly of these details is also comparatively work intensive and hard to automate. The use of parts of different materials like steel and plastics lead to problems in recycling, because this also requires a considerable labour effort for separation into different categories of material. Also, metal parts are subjected to corrosion problems. Further it is desirable to reduce the weight of the vehicle, because this saves fuel.

THE TECHNICAL PROBLEM

One object of the present invention is therefore to provide a locking mechanism according the above, which can be produced in a simple and cost efficient manner. Another object is that the switch button should facilitate recycling at the completion of its mission.

THE SOLUTION

For this purpose, the apparatus according to the invention is characterized in that the respective elastic means forms a curve between the driver and the respective plunger, when it in its locking position, which curve is obtained by pretension of the respective elastic means, and that the driver, the respective elastic means and the respective plunger is produced in one piece by injection moulding of a plastic material. The method according to the invention is characterized in that the injection of the plastic material into the moulding tool is performed centrically via the driver.

DESCRIPTION OF THE DRAWINGS

The invention will be described here below with reference to an embodiment shown in the accompanying drawing, in which
Fig. 1 is a side view of a locking mechanism according to the invention,
Fig. 2 shows the locking mechanism in Fig. 1 in a plane view,

Fig. 3 shows the locking mechanism being manoeuvred out of its locking position, and

Fig. 4 shows the locking mechanism according to the invention in cooperation with a manipulating means.

DESCRIPTION OF EMBODIMENTS

The locking mechanism shown in Fig. 1 - 3 is symmetrically shaped with a rod-like locking plunger 10, 11 at each side of a centrally located driver 12, which is connected to the respective plunger 10, 11 via a an elastic part 13, 14. Because of the symmetrical shape, assembly into a dashboard panel 15 is facilitated.

Normally, the driver strives to maintain the neutral position shown in Fig. 2, in which the elastic parts are acting to press the plungers apart into their respective locking positions.

The elastic parts 13, 14 are designed in such a way that they serve as pull means when manoeuvring the locking mechanism out of its locking position. This can for example be performed as is shown in Fig. 4, by means of a manipulating means 19 which cooperates with a transverse wall surface on the plunger 10. When displacing the plunger 10 out of its locking position together with the plunger 11 in the direction of the arrows 20, the driver is turned anticlockwise in the directions of the arrows 21 for mediation of the movement from the plunger 10 to the plunger 11.

The locking mechanism is produced in one piece, preferably by injection moulding of a plastic material, e.g. polyacetal. It is advantageous that the injection of material into the moulding tool is made centrally, i.e. via the driver 12. Then the material can flow via the elastic parts 13, 14 into the plungers 10, 11.

The injection tool is preferably so designed, that the two in opposite directions pointing plungers 10, 11 are located in parallel planes. When the mechanism then is assembled into the dashboard lid panel 15 the plungers 10, 11 shall be located along a common longitudinal axis, which also is congruent with an axle shaft 16 which houses the driver 12 via an axle opening 17.

The dashboard lid panel 15 is provided with guides at 18, which define slots for guiding the movement of the respective plunger, and which limits the stroke of the plungers.

At the assembly, the plungers 10, 11 must be moved from the not shown unloaded parallel position, to the central position shown in Fig. 2. This results in a preloading of the elastic parts, so that they run in a curve between the driver and the respective plunger. By this preloading of the plungers 10, 11 via the elastic parts 13, 14, the plungers will be maintained in their respective locations between the guides 18, in a in a play-free manner. This means that the frequency related noise which is caused by vibration and shaking, can be avoided in this part of the car interior.

Because the locking mechanism only is comprised by one single detail, the cost for production and storage is reduced considerably. Also, assembly into a dashboard lid panel. Besides, does not have to be taken apart for recycling, at the completion of its mission.

The invention is not limited to the above described embodiment, but several variations are conceivable within the scope of the accompanying claims. For example, more or less plungers than two may be used. The plungers, the button may be provided with more than one tongue 23. Also, the driver and the elastic parts may be designed differently

than shown. Other means than the manipulating means 19 can be used for manipulation of the plungers 10, 11.

CLAIMS

1. A mechanism for locking a lid, comprising at least
5 one lock plunger (10, 11) which is longitudinally
displaceable between guides (18) in cooperation with a
driver (12), which displacement takes place against the
action of elastic means (13, 14) which constitute a
functional connection between the driver (12) and the
10 respective plunger (10, 11), for guiding both the opening
and the locking action of the mechanism,
c h a r a c t e r i z e d in that the respective elastic
means (13, 14) forms a curve between the driver (12) and the
respective plunger (10, 12), when it is in its locking
15 position, which curve is obtained by pretension of the
respective elastic means, and that the driver (12), the
respective elastic means (13, 14) and the respective plunger
(10, 11) is produced in one piece by injection moulding of
a plastic material.
- 20 2. A locking mechanism according to claim 1,
c h a r a c t e r i z e d in that the driver (12) is
produced in one piece with two elastic means (13, 14), each
being connected to a respective plunger, by injection
25 moulding of polyacetal plastic.
3. A locking mechanism according to claim 2,
c h a r a c t e r i z e d in that a means (19) for
manipulation cooperates with one of the plungers (10),
30 wherein the manipulation of this plunger is mediated to the
other plunger (11) via the two elastic means (13, 14) and
the driver (12).
4. A method for production of a mechanism for locking a
35 lid, comprising at least one lock plunger (10, 11) which is
longitudinally displaceable between guides (18) in
cooperation with a driver (12), which displacement takes

place against the action of elastic means (13, 14), which production is made in one piece by injection moulding of the driver (12), the elastic means (13, 14) and the plungers (10, 11) into an interconnected member,

5 c h a r a c t e r i z e d in that the injection of the plastic material into the moulding tool is performed centrically via the driver (12).

5. A method according to claim 4,

10 c h a r a c t e r i z e d in that the injection moulding takes place in a symmetrical tool, in which the plungers (10, 11) are arranged in two different parallel planes.

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FIG. 1

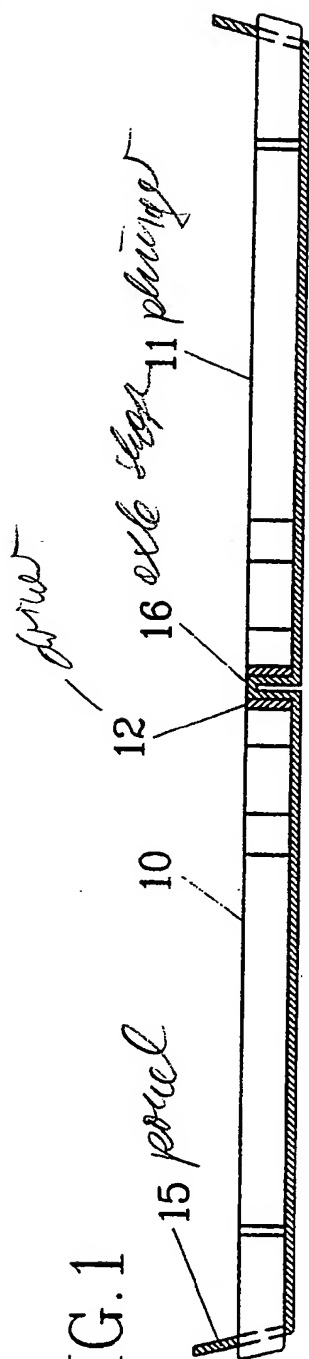


FIG. 2 *central Park*

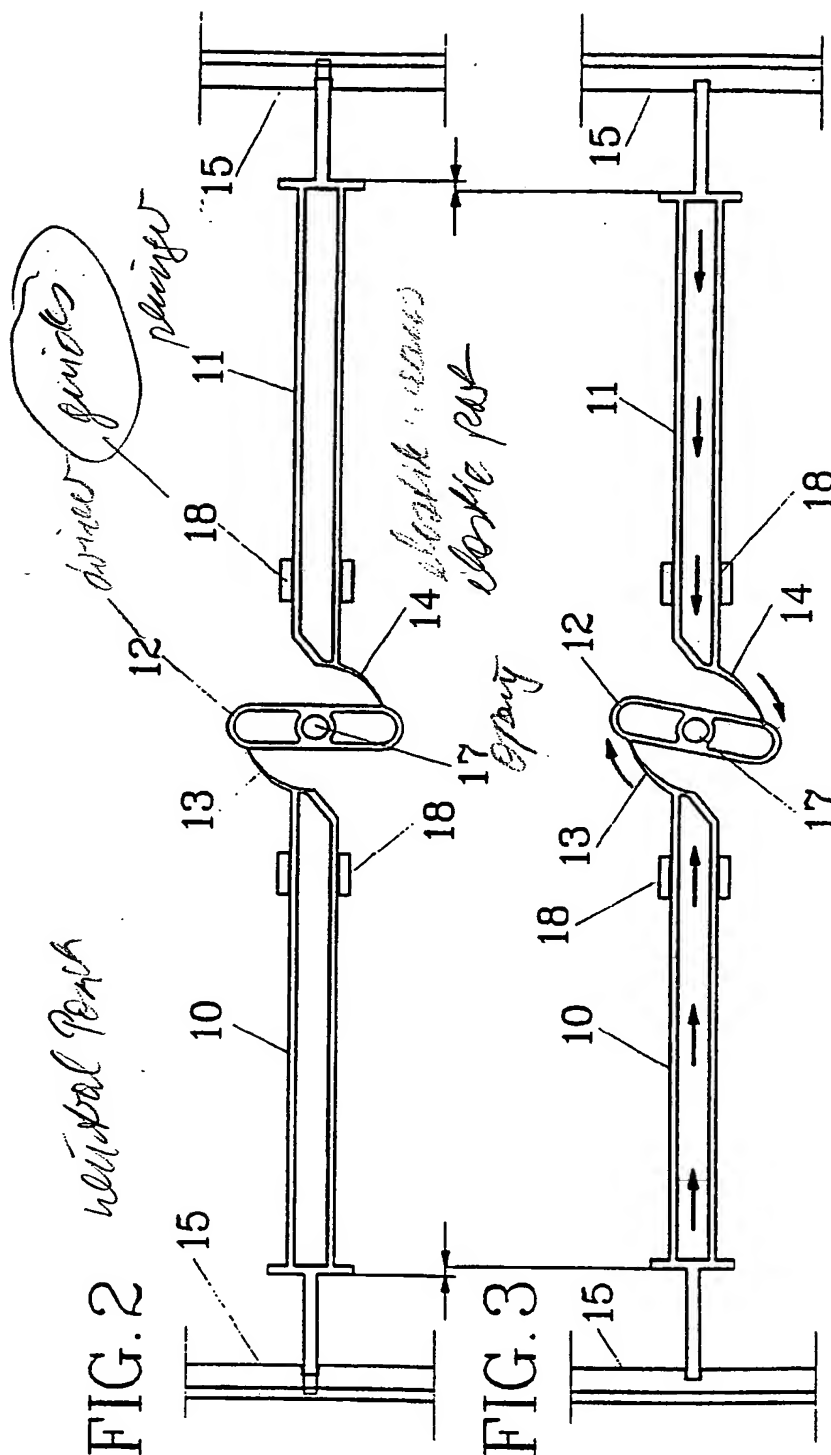
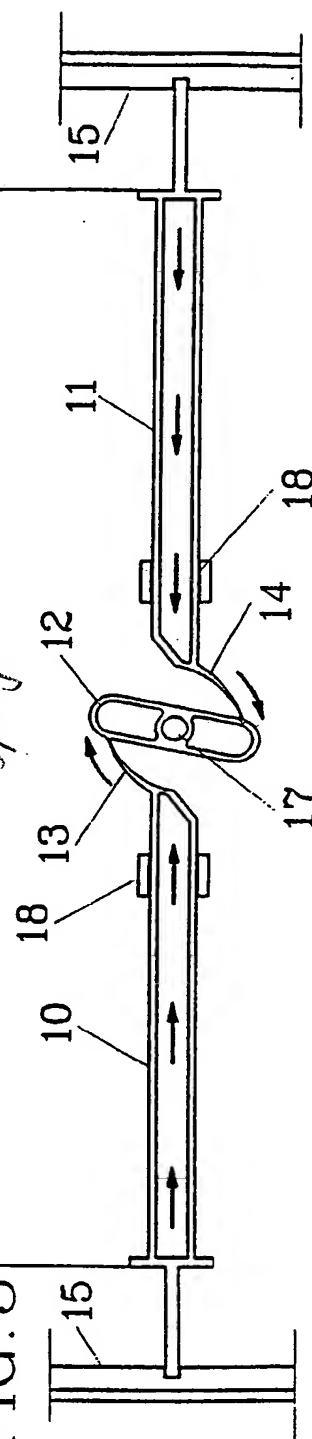
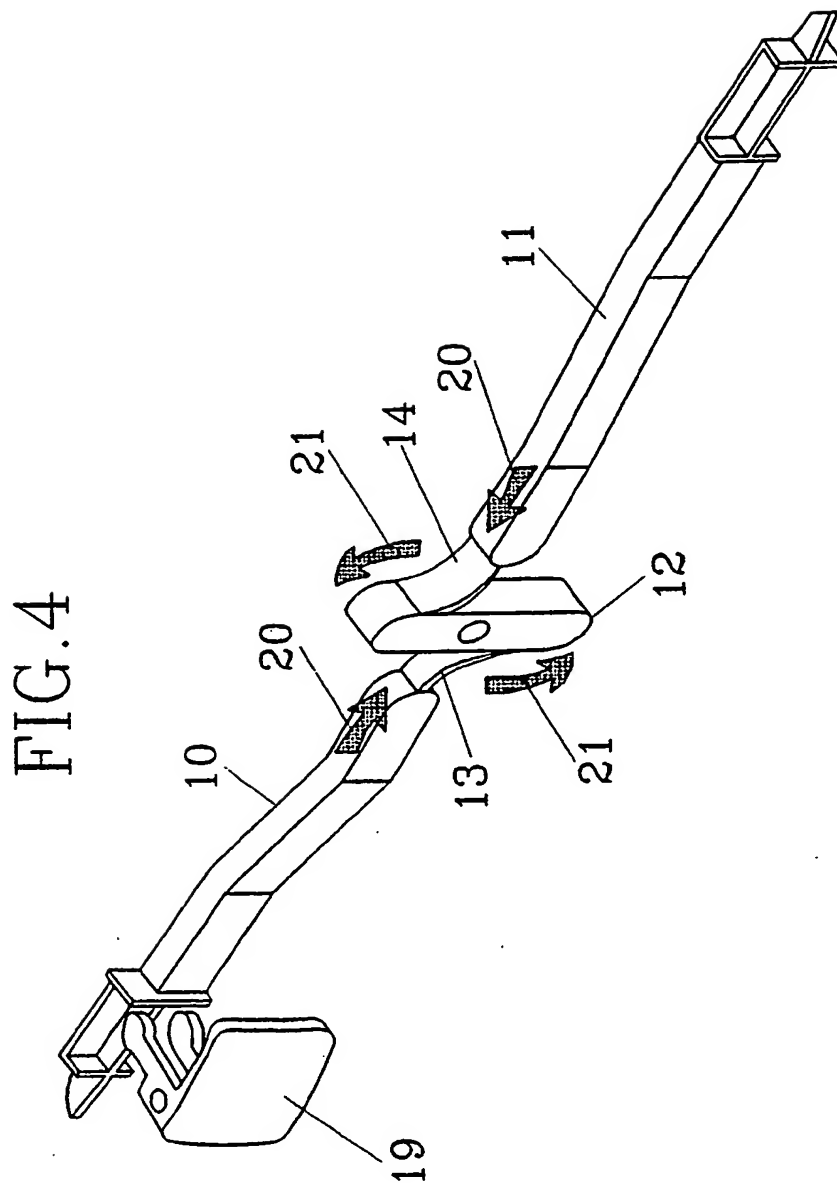


FIG. 3



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 95/00305

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: E05B 65/12, E05B 15/04, E05C 1/02, E05C 9/00, B29C 45/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: E05B, E05C, B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4898529 (B.J. MUCHNIK ET AL), 6 February 1990 (06.02.90) --	4-5
A	US, A, 3680901 (L.F. BIEBUYCK), 1 August 1972 (01.08.72) --	
A	DE, C2, 3709536 (SOUTHCO, INC.), 10 Sept 1992 (10.09.92) --	
A	GB, A, 2206921 (W H SMITH & SONS (EXEXTRUSIONS) LIMITED), 18 January 1989 (18.01.89) --	

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Date of the actual completion of the international search

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4781879 (K. OISHI), 1 November 1988 (01.11.88) ---	
A	US, A, 4419321 (J.S. HARDIGG), 6 December 1983 (06.12.83) -- -----	

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent document cited in search report.		Publication date	Patent family member(s)		Publication date
US-A-	4898529	06/02/90	EP-A, A, A	0303086	15/02/89
			JP-A-	1088941	03/04/89
			US-A-	4877666	31/10/89
US-A-	3680901	01/08/72	AT-A, B-	313744	15/01/74
			AT-B-	318427	25/10/74
			BE-A, A-	769070	03/11/71
			CA-A-	940966	29/01/74
			DE-A-	2130003	03/02/72
			FR-A, A-	2098048	03/03/72
			NL-A-	7108461	02/02/72
DE-C2-	3709536	10/09/92	GB-A, B-	2190128	11/11/87
			US-A-	4705308	10/11/87
GB-A-	2206921	18/01/89	NONE		
US-A-	4781879	01/11/88	JP-C-	1857669	27/07/94
			JP-A-	62119730	01/06/87
US-A-	4419321	06/12/83	NONE		

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